



**is <sup>NOT</sup> enough**

keynote perspective



# Introduction

We're living in a fantastic new age—a fascinating but also a challenging age. This is a time where the world is advancing at a rate that we can barely keep up with. In our present times, powerful technologies and information systems have precipitated a parallel change in the knowledge base. Facts are becoming obsolete faster now, while knowledge built on these facts becomes a lot less durable. InfoWhelm is causing societies to reorganize as it continues breaking down the boundaries between conventional disciplines.

This is altering the very fabric of our society, and affecting the way we work, play, communicate, view our fellow citizens, how we learn, and what's important for us to know. Yet schools in their structure, operation, curriculum, pedagogy and assessment models remain largely the same as they have for decades.

This perspective explains why it's necessary for students to develop the essential 21st century fluency skills, and why these skills are needed to contend in the fundamentally different living, working, and learning environment of the Information Age. Being fluent involves learning a transparent and unconscious internalized process that's as natural as riding a bike. A focus on fluency rather than literacy requires educators to completely rethink current assumptions about teaching, learning, and assessment.

We will provide insight into what each one of these essential five fluencies actually means, and why it's so important that our children internalize such valuable skills—for their lives today, and for our world tomorrow.

# Out with the Old, In with the New

It's been long known that talking and teaching at students isn't effective. Remember that old saying: I hear and I forget; I see and I remember; I do and I understand.

Information needs to be internalized to be remembered. It must be moved from short term memory to working or permanent memory. For this to take place, there are four things that have to be happening for them::

- **New information must connect to something the learner already knows and has made meaning of.** Unless that connection is present new content stays in working memory only a few seconds. According to research we discard 98 percent of everything that comes into the brain.
- **Previous knowledge and experiences must be considered.** What your students bring with them into your classroom determines not only what they'll learn, but when and where and even *if* they'll learn. Learning is very personal. It's about relevance to the student, not the teacher.
- **Learners have to be given repeated differentiated learning opportunities over extended time periods.** If they don't get it the first time, you can't just speak slower and louder. It's not that kids are slow. What we encounter here is a different style of learning. Our classrooms must fit the needs of many types of learning styles.
- **Students must be provided with consistent feedback and have their efforts regularly and meaningfully reinforced.** According to video game developers games are designed requiring a decision to be made every 1 second, and players are positively rewarded for those decisions every 7 to 12 seconds.

These are the things that have relevance and a means of proper connection to students of the digital age. It's the way in which we break down the barrier between ourselves and the unique mind of the digital learner, as well as take steps toward reworking our current one-size-fits-all teaching styles.





# Quality Reinforcement

According to research, students either ask a question or are positively reinforced in classrooms once every 12 hours—that's it. This could go a long way towards explaining why some students are waiting for an Internet or video game version of schools.

Quality reinforcement tells kids two things: First, it tells them what they're doing right, and second, it makes positive suggestions for improvement. If quality reinforcement using the four above points is put into practice, measurable learning will take place.

Let's drive that point home even further. In a study once done in Michigan, 2 groups of 100 grade eight students were taught the same information two different ways—traditional “full frontal” lecturing and traditional tests and, in the other corner, a project/process based approach with additional student and teacher assessment.

Quality reinforcement tells kids two things: First, it tells them what they're doing right, and second, it makes positive suggestions for improvement.

At the end of year 1, scores were identical. But 1 year after that when given the very same test, the group taught by traditional lecturing was able to recall only 15 percent of the content. The project-based group, however, were able to recall over 70 percent of the content.

Effective learners relate existing knowledge to new information. Architect and graphic designer Richard Saul Wurman called this “velcro learning.” Information without context, interest, and relevance is like one side of a piece of velcro—it doesn't stick. When relevant connections are made between past experience and new information, long term learning sticks.

# The Learning Cone

Edgar Dale developed the Learning Cone back in the 1960's. It has been adapted many times through reaffirmed research since then by those such as Glasser and Marzano. Research has determined, after 2 weeks on average, that learners recall the following:

- Less than 10 percent of what they read
- About 20 percent of what they hear, such as in a lecture
- About 30 percent of what they see
- About 50 percent of what they hear and see, using 2 or more media simultaneously
- About 70 percent of content that requires active participation, either in discussion or giving a talk
- More than 90 percent of content that involves these three methods—teaching it to someone else, followed by the application of the content in a real-life task or simulation

All of this is on a continuum, from receiving the information to active engagement. Despite this research many educators continue to teach using “stand and deliver, sit and learn”, just the same as the old Industrial Age. It’s factory-style learning, with structure and schedule.

Think about how it was for us growing up. We had movies, TV, radio, telephones, you name it. Compare this to the digital world kids grow up in today. To them this stuff has always been around. They’ve internalized what has fundamentally changed our world over the last decade.

Do you think we might need to reconsider our old assumptions about education? Are the old ways still working?

Because of exponential times, changes that once took decades now take days. 20th century literacy, reading, and numeracy is no longer enough to provide our students with what they’ll need to be prepared for the world we’re expecting them to create and manage.

It’s our duty to give them more—for both themselves, and for our future.







# 21st Century Fluency

Some believe this just means teaching kids about “technology”. But consider these facts before you fall into that trap. First, technology is everywhere, everybody has it and knows how to use it, and it’s a part of daily life. Second, technology is becoming easier to use, and devices like the iPhone are so simple they don’t even come with manuals. Third, technology has always been around for kids growing up today, and using digital tools is second nature to them.

21st century skills aren’t about technology. It’s not about hardware; it’s about *headware*. The skills we’re talking about essentially fall under 5 categories:

1. **Obsolete Skills**—These may still be practiced for nostalgia, but have been replaced by other mainstream skills (ex. sharpening swords, operating an elevator, milk man, etc.)
2. **Traditional Skills of Decreased Emphasis**—This refers to things like handwriting, hand accounting, and the Dewey Decimal system. They aren’t necessities, but they continue to help cultivate mental processes.
3. **Traditional Literacy Skills**—Here we have reading, writing, numeracy, research, traditional communication, and social skills. These are fundamental practices for transmitting culture to every new generation, and are still essential in the 21st century.
4. **Traditional Skills of Increased Emphasis**—In our new digital age this refers to the skills of information processing, critical thinking, problem solving, technology comprehension, and graphical communication.
5. **New or 21st Century Skills**—These have emerged as technology has appeared. They are unique to our present digital generation. They include social networking and online communications.

It’s a mistake to think that the skills that served us in the 20th Century will carry us through the age of multimedia, hypertext, blogs and wikis. Today our students need an entirely different set of skills than what served us for education in the 20th century.



# From Consumer to “Prosumer”

Daniel Pink, Donald Tapscott and Thomas Friedman, among many, are saying new skills are needed within our rapidly changing society; skills well beyond the 20th century. Our schools train students to be good consumers of traditional content. However, in the case of digital content, our educational approaches must teach today’s students to be responsible producers, writers, artists, and composers—essentially what you’d call “prosumers” of content.

We all need to be able to work with information in all media forms to produce content of any value that will entertain and teach. According to Daniel Pink’s book *A Whole New Mind*, if students are taught traditional literacy skills and learn to be traditional consumers they will be literate by 20th century standards, but not 21st century standards.

So...what world are we preparing our kids for? Their future, or our past?

Thomas Friedman says in his book *The World Is Flat* that students armed with only 20th century consuming skills will be completely unprepared for life as a citizen, family member, or worker in a rapidly transforming economy. We must move from 20th century literacies to 21st century fluencies. We define the term “fluency” here as an unconscious level of proficiency. It is something that needs to be internalized so that essentially it becomes second nature.

21st century skills are not about technology. It’s not about hardware; it’s about *headware*.

From here, we can categorize five 21st century fluencies that everyone will need for success in 21st century life. They are solution, information, collaboration, creativity, and media fluency. These are unconsciously internalized skill sets that are absolutely essential to not just living, but thriving in this ever-changing digital landscape.

# The Five Fluencies

## Solution Fluency

Research and writing regarding the advent of workplace technology tells us that left-brain tasks are already automated or outsourced via Internet in a global economy. That leaves jobs that require whole-brain thinking. This means creativity and problem solving applied in real time.

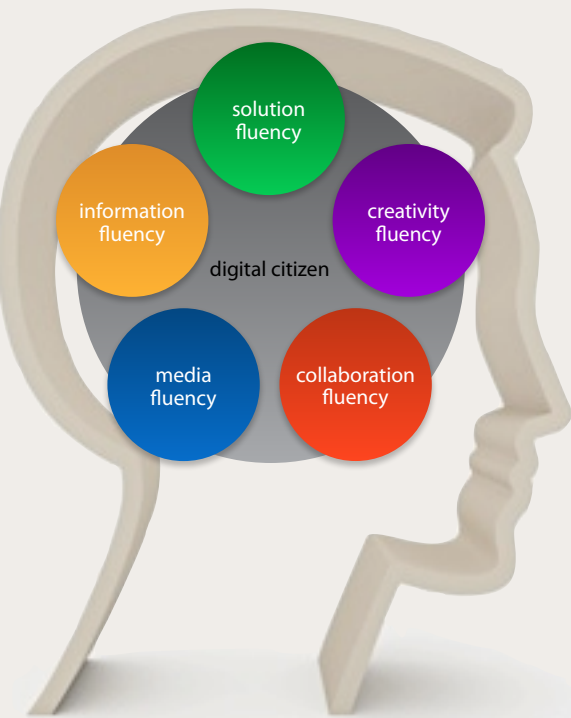
So, let's outline the 4D approach to problem solving. This is a logical and thorough approach to executing the procedure for tackling problems, and it works to ensure that it has relevancy and meaning for the student. In the 4D system, you need to:

1. **"Define" the problem**, because you need to know exactly what you're doing before you start doing anything.
2. **"Design" a solution**, because planning prevents wasted effort.
3. **"Do" by putting the plan into action**, even though doing is not a linear process and may lead you back to define or design.
4. **"Debrief" and foster ownership**, by getting involved in the evaluation of the problem solving process.

## Information Fluency

Because of exponential development and things like InfoWhelm, raw data is increasing dramatically. Facts are becoming obsolete faster, and knowledge built on these facts is considerably less durable. Also, worlds of information are only a mouse click away.

How much information are we talking about here, anyway? Here's an interesting fact: It has been calculated by a Berkeley University study that the estimated content of the digital world in 2009 generated around 5 exabytes of data—the equivalent of the amount that you could store in 37,000 Libraries of Congress, the world's largest library.







That said, information fluency is the ability to unconsciously interpret this avalanche of information in all formats, in order to extract the essential and perceive its significance. This requires 5 steps:

1. **Ask** good questions, in order to get good answers.
2. **Access and acquire** the raw material from the most appropriate digital information sources, which today are mostly graphical and audiovisual in nature.
3. **Analyze and authenticate** and arrange these materials, and distinguish between good and bad, fact and opinion. Understand bias and determine what is incomplete to turn the raw data into usable knowledge.
4. **Apply** the knowledge within a real world problem or simulation using a VIP action (vision into practice).
5. **Assess** both the product and the process, which is both a teacher and a student practice.

Facts are becoming obsolete faster, and knowledge built on these facts is considerably less durable.

### Collaboration Fluency

Virtual interaction through social networking sites and online gaming domains has become a part of our kid's daily lives. We are interacting with people all over the world with electronic and wireless communication technology. As Thomas Friedman writes, this has literally meant the "death of distance," and it has tremendous potential for education.

For example, students learning about civil war or the separation of church and state could be talking to kids in Kosovo or Iraq or Pakistan. Students learning about state sponsored censorship could be talking with kids in North Korea or China.



Students could work in virtual partnerships on projects with kids from across town or across the world, and the skills they develop will help them greatly because the working world is being affected by new communication technology.

This is the very essence of collaboration fluency. It focuses on team working proficiency with virtual partners in an online environment.

### **Creativity Fluency**

This fluency regards form in addition to function, and the principles of innovative design combined with a quality functioning product. Artistic design is a rapidly growing area of the economy. It remains one of the most effective means of communication we have.

Creative fluency extends beyond visual creative skills to using the imagination to create stories, a practice which is in demand in many facets of today's economy. It is widely regarded by many successful industries that creative minds come up with creative solutions.

There is tremendous value in the artistic creation of items in order that they may transcend mere functionality, becoming things that bring us pleasure in our daily lives. Creative fluency is the process by which artistic proficiency adds meaning through design, art, and storytelling.

### **Media Fluency**

This goes way beyond operating a digital camera or creating a podcast. It's about taking a critical look at the digital content of a website, video, blog, newscast, or video game. It involves decoding the messages in digital media to understand how data can be shaped or misrepresented.

It's understanding not only how the media is being used to shape our thinking, but how well it's being used. It also allows us to measure the effectiveness of a communicated message and to identify the most appropriate media tool to use for getting the message out. In an interactive visual world, our children must be able to create and publish digital products that they can use to communicate with just as effectively as they can with text.



Digital learners may appear to have an exceptional level of these media skills already, but this belies the fact they have holes in their understanding of the tools and techniques for this level of communication.

... our children must be able to create and publish digital products that they can use to communicate with just as effectively as they can with text.

Therefore, the idea is to challenge students to create digital products that reflect their understanding of the content, develop technical skills, and provide them with the empowering principles of graphic design.

Students must learn these 21st century fluencies, which are either being ignored or considered merely secondary or as options in our education system. Students of the 21st century must:

- Learn to communicate with students who are not physically in their classrooms
- Learn to jointly create products online
- Learn to appropriate online behavior as virtual digital citizens

These skills need to be made mandatory and every bit as important as traditional literacy skills, if not more important. They are required at every grade by every student and every teacher.

These 21st Century fluencies need to be taught in as structured a manner as any other part of any curriculum from Kindergarten to university studies, and they must become internalized. Our students should reach a level wherein these skills are used unconsciously and effectively without thought.

In much the same way that we use a pen, ride a bicycle, or use a telephone, these fluencies must be absorbed and integrated for building and managing our digital world, both today and for the very swiftly approaching future in which our children will live their adult lives.



# Our Students, Our Future

In the end, our job as educators should no longer be just to stand up in front of our children and show them how smart we are and how stupid they are. The problem is that, as educators, we simply don't understand how different our digital generation really is. Neurologically speaking, kids today aren't just a little different; they're completely different.

If we continue to do things that we already know aren't working, we have to consider just who really has the learning problem ... because it certainly isn't the kids.

Sure, we want understanding. We want content retention and a measure of success on school exams, state exams, AP or ACT exams. We want to address and exceed the mandates of NCLB. We want children to demonstrate proficiency beyond content recall.

Well, if this truly is what we want, then we can't just stand up and lecture to them.

If the desire is for our kids to graduate as more than just highly educated useless people who are good at school but not adequately prepared for life, then our emphasis as professional educators has to be on much more than just content recall.

We're talking about the skills of critical thinking, problem solving, and the 21st century fluencies that move beyond theory. We're talking about the practical application of what is learned by giving problems first, and teaching second. So ask yourself:

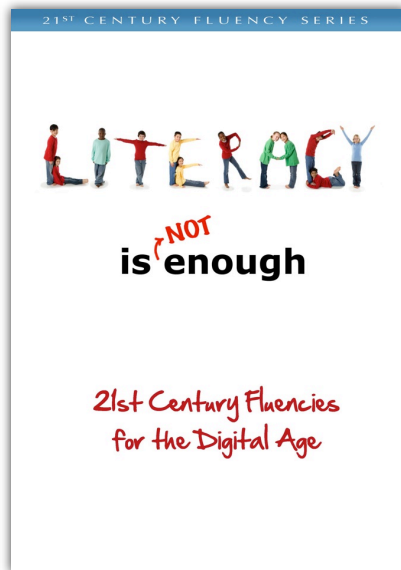
**Where do you go from here?**

**What do you know now that you didn't know before?**

**What new ideas are you going to tell your friends, family and colleagues about?**

**What action are you going to take RIGHT NOW?**





### the book and dvd

For more information or to buy a copy of the book, or a DVD of the keynote presentation

[ine.21stcenturyfluency.com](http://ine.21stcenturyfluency.com)

### help spread the word

[Become a Committed Sardine](#) and receive notifications of each new perspective as it is created. You'll also receive our free ebook, *Highly Educated Useless People*.

There are a whole bunch of other reasons too, other than the coolness factor of being able to tell others that you are a Committed Sardine, so [check it out](#).

To book one of our presenters for your next event, [please contact us](#).

### copyright and creative commons

This perspective is copyright [21st Century Fluency Project](#). It is licensed under [Creative Commons](#). Please feel free to print it or distribute it electronically as long as you do not modify it in any way or charge for it. Most of the images are copyright [iStockPhoto](#).



## 21<sup>st</sup> Century Fluency Project

This resource is the collaborative effort of a group of experienced educators and entrepreneurs who have united to share their experience and ideas and to create a project geared toward making learning relevant to life in our new digital age. Our purpose is to develop exceptional resources to assist in transforming learning to be relevant to life in the 21st century. At the core of this project are our [Curriculum Integration Kits](#)—engaging, challenge-based learning modules designed to cultivate the essential [21st century fluencies](#) within the context of the required curriculum. For more information please visit our web site [www.21stcenturyfluency.com](http://www.21stcenturyfluency.com).